économiepublique

Économie publique/Public economics

14 | 2004/1
Varia

Competition and Regulation in the UK Electricity Market

Compétitivité et réglementation du marché de l[1]électricité en Grande Bretagne

Stephen Littlechild

OpenEdition Journals

Édition électronique
URL : http://journals.openedition.org/economiepublique/208
ISSN : 1778-7440

Éditeur
IDEP - Institut d'économie publique

Édition imprimée
Date de publication : 15 janvier 2005
ISBN : 36-26-44-X
ISSN : 1373-8496

Référence électronique
Stephen Littlechild, « Competition and Regulation in the UK Electricity Market », *Économie publique/ Public economics* [En ligne], 14 | 2004/1, mis en ligne le 05 janvier 2006, consulté le 01 mai 2019. URL : http://journals.openedition.org/economiepublique/208

économie publique

études et recherches

Revue de l'Institut d'Économie Publique

Deux numéros par an

n° 14 - 2004/1

IDEP

économie publique sur internet : www.economie-publique.fr

Centre de la Vieille-Charité

2, rue de la Charité – F-13002 Marseille

Imprimé en France.

La revue économie publique bénéficie du soutien du Conseil régional Provence-Alpes-Côte d'Azur

ISSN 1373-8496

Dépôt légal décembre 2004 – n° imprimeur 362644X

Competition and Regulation in the UK Electricity Market

Stephen Littlechild *

Introduction

This paper describes the development of UK electricity policy in the context of the development of energy policy in the European Union. It notes the principles for promoting competition that have emerged from experience. It describes the measures taken to transform the nationalised electricity industry to a fully competitive one, in both generation and retail supply. It outlines policy and developments on wholesale trading: the Pool and NETA. Finally it indicates some of the costs and benefits to customers and notes the increase in regulation over time.

1. EU proposals & policy

The UK Government embarked on the liberalisation of the electricity supply industry in 1989. At the time the EU was in the process of creating a single market in goods and services, although the European Commission recognised that it would take some years before similar arrangements would apply to energy markets. In the early 1990s the EU had the opportunity to observe the "British experiment" taking place in the liberalisation of the electricity supply industry. During the later 1990s the EU put in place legislation that introduced aspects of liberalisation to the European market. However, the legislation was confined largely to access to and use of electricity transmission networks within and between Member States.

In 2001 the EC proposed a Directive that, if adopted, would have introduced full market opening for electricity in Member States by 2005, so that all consumers would be free to choose their own supplier by that date. Users would have

*. Honorary Professor, University of Birmingham Business School. Principal Research Fellow, Judge Institute of Management, University of Cambridge. Formerly Director General of Electricity Supply 1989-1998. *Workshop on Opening of Electricity Markets*, Marseilles, January 23rd 2004. I am grateful to John Stewart for assistance in preparing this paper. littlechild@tanworth.mercianet.co.uk

access to transmission networks, and operators of networks would be required to provide greater transparency. The EC argued that "Third party access based on published and non-discriminatory tariffs, and a high level of unbundling, are not only conducive but necessary to ensure effective competition."

The governments of most Member States agreed to these proposals. The French government vetoed them because of its opposition to retail competition.

During the following year 2002 Member States agreed a revised policy on a slightly extended timescale. Competition in electricity supply would be introduced to the non-residential market by 2004 and to the residential market in 2007. EU energy policy is now broadly in line with UK policy, but both sets of arrangements continue to develop. For example, the EU is now focused on improving access arrangements for use of transmission networks and interconnectors.

2. 2nd EU benchmarking report

In its second report on the progress towards a single market in electricity the EC notes that policy has moved forward but highlights several areas of difficulty. In the main these difficulties are considered transitional but the EC still needs to monitor closely the rates of implementation by each Member State. The EC identified four areas:

First the existence of differential rates of market opening between Member States reduces the extent to which benefits of competition are available to households in some Member States. The different rates of opening also distort competition by allowing companies in some Member States to benefit from cross-subsidies during the restructuring of their industries.

Second disparities in tariffs for access to transmission networks, reflecting a general lack of transparency and inefficient regulation of companies, create barriers to competition.

Third high market power in generation and illiquid wholesale markets impede new entrants.

Fourth insufficient interconnection between transmission networks and unsatisfactory methods for allocating scarce capacity on interconnectors create constraints on trade between the electricity markets in Member States.

3. Creating effective competition: the lessons

In the light of these developments in EU policy, and the concerns about the effectiveness of competition in generation and retail supply, it may be helpful to examine how the UK dealt with these issues.

In the light of UK experience, five principles seem to be fundamental to securing effective competition.

First effective competition needs more than simply removing the statutory barriers to entry.

Second there need to be enough sellers at the outset, to ensure that prices are competitive and to provide buyers with a choice of sellers. (No doubt it is also necessary to have enough buyers to provide sellers with adequate choice, but that was never an issue in the UK at the time, with twelve major supply businesses and a significant number of large users able to buy direct.)

Third there needs to be adequate separation and unbundling of business activities, distinguishing especially between monopoly and competitive sectors. Putting the transmission network into separate ownership was particularly important.

Fourth different activities within a company - such as generation, retail supply, and distribution - need to be run as separate businesses, with separate accounts. Later, this needed to be reinforced by requirements of separate staff, premises, IT facilities, and separate legal ownership.

Fifth operators of transmission and distribution networks need to publish charges for access. These charges must be non-discriminatory, transparent and subject to regulatory review.

4. Competition in electricity generation

Before privatisation, the Central Electricity Generating Board (CEGB) owned and operated the transmission network and most electricity generators in England and Wales. Under the privatisation programme the CEGB was split into a separate transmission company with duty to facilitate competition and three successor generator companies, one of which comprised the commercial nuclear generation stations. The objective was to encourage new entry into the generation sector and

promote competition [1].

Within a few years it became apparent that three generating companies were not enough to secure effective competition. There were repeated price increases by generators in the Pool, which triggered complaints from large users and regional supply companies. They argued that Pool Prices were higher than they would have been if the market were fully competitive. Although new entrants came into the market, on a larger scale than anticipated, this took several years, and was insufficient to prevent the early price increases and to provide sufficient choice to users and suppliers.

5. Regulatory action

The Office of Electricity Regulation (OFFER) investigated the complaints of price increases and other allegations of uncompetitive activities by the successor generators. It concluded that the two fossil fuel generators (National Power and PowerGen) were able to exert undue influence on Pool Prices. The preferred remedy was to bring about more competition rather than introduce price controls on generators. However, OFFER had no powers to compel the successor companies to divest generation capacity, although it could refer the companies to the Competition Commission which did have that power if it concluded that the situation was against the public interest.

OFFER therefore indicated that it would make a reference to the Competition Commission unless the two successor generating companies agreed to the voluntary divestment of 6GW of their generation capacity (4 GW from the larger company, 2 GW from the smaller one). This was equivalent to about 8 per cent of the capacity in the market. Until these disposals were accomplished, the companies agreed to a two year transitional arrangement on bidding into the Pool to keep average Pool Prices below the level then obtaining.

6. Further developments

The divestment introduced a more competitive market with more choice, but the market was by no means fully competitive. It seemed as though further regulatory action would be required. Within two years of the first disposals, some

1. In Scotland, two vertically integrated companies each combined all the business activities of generation, transmission and supply. Each was restructured into separate businesses although privatised in the same ownership.

generating companies wished to acquire retail supply and distribution activities. OFFER opposed these acquisitions on the grounds that there was still not enough competition in either generation or supply, and such mergers could make the situation worse. However, if the companies were to make further voluntary disposals, this time comprising two tranches of 4 GW each, this would bring compensation benefits that would allow the mergers to proceed.

Over time, the incumbent generators began to find it profitable to sell more generation capacity to new entrants on a voluntary basis. This brought about a significantly more competitive market.

7. The present situation in the generation market

As a result of much new entry and the restructuring of existing plant, the present market is much more competitive than before. At the time of privatisation there were three main generators, with about five very small generators including the interconnectors with France and Scotland and the Pumped Storage Business owned by National Grid Company. In contrast there are now some 40 generation companies operating in the market. The market share of the largest generating company was 48 per cent in 1990 and is under 17 per cent now. Over the same period the combined market shares of the largest two companies has fallen from 78 per cent to about 29 per cent, and the share of the largest three companies from about 94 per cent to 38 per cent [2].

From 1997 to 2001 wholesale prices fell by about 40 per cent in real terms, although they have subsequently recovered some of this ground. There is obviously much speculation about the main reasons for this. The main driver seems to have been the less concentrated market structure, with the introduction of the New Electricity Trading Arrangements (NETA) a contributing factor, along with lower fuel prices and greater efficiency of generating stations.

8. Wholesale trading - Part 1: The Pool

From privatisation to 2001 the wholesale market in England and Wales was an Electricity Pool. A uniform price was set for all buyers and sellers on the basis of bids by sellers. This arrangement had the advantages of providing all parties with

2. I am grateful to Nigel Cornwall for these figures from 2003.

a published price and an open market. Over time, OFFER introduced incentives on National Grid Company as system operator to reduce the once-high uplift costs.

However, the Pool had several disadvantages, which over time compromised the effectiveness of its arrangements. A uniform system of marginal prices facilitated the exercise of market power. Only the supply side participated actively in setting prices, not the demand side, making it 'only half a market'. The uniform price limited the scope for competition in retail activities. Most parties considered that the governance arrangements were too inflexible and unable to respond effectively to changes in the market. The compulsory pool restricted the ability of parties to innovate, and a lack of transparency in price setting hindered the development of markets in derivative products including futures markets.

As part of the policy to promote further competition, OFFER took steps to replace the Pool by more competitive and flexible arrangements.

9. Wholesale trading - Part 2: NETA

In 2001 New Electricity Trading Arrangements (NETA) replaced the Pool There is now bilateral trading between demand and supply side participants, and this accounts for over 95 per cent of electricity output. Market participants are now responsible for balancing their own position, and exposed to penalties for in-balances in each settlement period. The Network Operator takes bids and offers from generators and suppliers to balance the system.

The system rewards flexibility and predictability. This is accentuated by the dual cash-out system, whereby the price paid for buying extra energy in the Balancing Mechanism is typically higher than the price received for selling extra energy. This new approach has exposed the higher costs of generation that is less flexible and predictable, notably from some renewable sources.

Additional efficiency incentives on the National Grid Company have further reduced the costs of balancing of the system.

10. Retail electricity supply

UK government policy was to open the retail supply market in three phases. Customers with a maximum demand greater than 1MW a year would be free to choose their electricity supplier from 1990. In 1994 market opening would be extended to customers with a maximum demand of 100kW, and in 1998 to all customers.

From the outset the transmission and distribution network operators were required to set public access charges to suppliers for use of the networks. These were limited by the price controls on these networks. This facilitated competition by rival suppliers.

For the large users with access to the competitive market, price controls on final prices were soon removed. Supplies to franchise customers (those without access to competition) were subject to overall price controls.

In 1994, when the market for medium-sized customers was opened to competition, the controls on their final prices were removed, as with the larger users. In both cases these customers were adequately protected by competition, which led to lower prices in the market.

Nowadays, most large customers sign supply contracts for about one year, and consequently some switch their supplier as frequently as every year. Initially, some customers experienced problems due to inaccurate meter reading and data transfer between meter readers and suppliers.

In light of the experience gained in the two opening phases of competition, OFFER and market participants made extensive preparations for the opening of the residential market. Unlike the first two phases customers in the residential sector were not required to install half hourly meters, so a system of electricity profiling was developed for settlement purposes. Suppliers needed to develop their IT and billing systems to cope with the new arrangements, which proved to be major procurement and development projects. Meter reading arrangements needed to be specified, and provision was made for competition in meter reading separate from competition in supply.

To ensure that standards of service did not decline with competition, codes of service were specified for all suppliers. In addition, to avoid price increases before competition became effective, OFFER introduced transitional two year(s) fixed price caps on incumbent suppliers. Unlike the previous price controls, these did not allow actual purchasing costs to be passed-through to customers, hence provided greater incentive to purchase efficiently.

From 1990, incumbent suppliers were in the same ownership as distribution companies. Although they were required to separate supply and distribution activities, other competitors (new entrants into retail supply) were concerned that separation was not adequate to allow a fully competitive market. The new Utilities Act provided for greater separation of distribution and supply activities, and in particular required these to be legally separate businesses, and also provided for separate licences for distribution and supply. This enabled companies to sell one activity and specialise in the other if they wished to do so. Several in fact did, although subsequent mergers have to some extent re-established vertical integration.

11. Retail competition: residential

Before the residential market opened it was unclear whether competition would be attractive to either customers or suppliers. In fact residential customers welcomed the opportunity to choose their suppliers. The rate of switching was remarkably constant, at a net rate of movement away from incumbents of about 1 per cent a month. As of now, some 46 per cent of customers are with a supplier other than their incumbent, and over 50 per cent have switched suppliers at one time or another.

Price reductions were initially in the region of 10 per cent, but later increased to 20 per cent. OFGEM (successor regulator to OFFER) extended the transitional price caps on final supplies for a further two years. The strength and extent of competition enabled OFGEM to abolish them in 2000.

Some customers complained about selling tactics, or experienced problems arising from the processes of switching and erroneous transfers by suppliers. Customer reputation and regulatory action, and in some cases heavy financial penalties for offending suppliers, have helped to induce improvements by companies.

12. Price Performance in England and Wales

During the period from 1990 to 1998 all customers experienced real price reductions of 25 to 35 percent. A major part of this can be attributed to competition in generation and retail supply. Other factors that have contributed are lower fuel prices, tighter network price controls and the abolition of the nuclear levy.

Over the next few years large customers realised a further 27 per cent reduction, but which for most is offset by a 10 per cent increase due to the Climate Change Levy giving a net reduction of 17 per cent. Suppliers have continued to offer price reductions to domestic customers in the region of 17 per cent when comparing those of an incumbent supplier in 1998 with cheapest competitor now. In both cases there have been price increases in recent months reflecting higher prices in the wholesale market.

13. Net benefits of privatisation

Is it possible to quantify the costs and benefits of electricity privatisation? In 1997 Professor David Newbery and Michael Pollitt carried out such a cost benefit

analysis of privatising the CEGB generation and transmission sector of the industry. They estimated the efficiency benefits in terms of running existing stations at lower costs, the one-off restructuring costs (principally early severance payments to employees), and the investment savings from building more economic gas-fired plant rather than more costly coal and nuclear plant that had been the previous policy of the industry.

The results depended on which of two counterfactuals were assumed: whether one assumed that the nationalised industry would have become more efficient and changed its investment policy, or not. The following table shows their estimates of these magnitudes.

Table 1 : *A previous calculation of the costs and benefits of privatisation*

Counterfactual	pro-CEGB	pro-privatisation
Efficiency benefits	7.6	8.8
Restructuring costs	-2.8	-2.8
Fuel/investment savings	-0.7	3.6
NPV of benefits	4.1	9.6
Environmental externalities	1.9	2.3
NPV incl externalities	6.0	11.9

(£ billions Net Present Value at 6 per cent discount rate)

Efficiency savings are estimated at about £8 billion present value in either counterfactual, restructuring costs were nearly £3 billion, and investment savings ranged from under £1 billion to well over £3 billion depending on the counterfactual. The net benefit is between £4 and £10 billions. Environmental benefits from cleaner fuels might be worth another £2 billion or so. These calculations suggest that privatisation was worthwhile, in the sense of increasing aggregate net present value of benefits to all participants in the economy.

14. Recalculation of benefits

Further research by Geoffrey Horton and Littlechild, which is still in progress, reassesses the Newberry and Pollitt study and updates it to reflect experience since 1987. They suggest that the efficiency gains are likely to be greater than estimated in the earlier work, and for the moment base this on sensitivity analyses in the previous paper. They also argue that the CEGB would have built more nuclear and coal stations than assumed in the Newbery and Pollitt counterfactual, and this would have been more costly than gas-fired stations. Savings from emissions might be greater if there are higher CO_2 values with the advent of traded markets.

The table below is a preliminary indication of the possible results of the Horton & Littlechild recalculation. It suggests that the net benefits of privatisation might be of the order of twice the level previously calculated. A range of figures is given for environmental benefits since the possible market price of those is particularly uncertain at present.

Table 2 : *Revised benefits of privatisation*

	Pro-CEGB	Pro-privatisation	Horton and Littlechild
Efficiency benefits	7.6	8.8	12.4
Restructuring costs	-2.8	-2.8	-2.8
Fuel/investment savings	-0.7	3.6	13.3
NPV of benefits	4.1	9.6	22.9
Environmental externalities	1.9	2.3	2.5 - 5.2
NPV plus externalities	6.0	11.9	25.4 - 28.1

(£ billions Net Present Value at 6 per cent discount rate)

15. Who gets the benefits of privatisation?

Newberry and Pollitt calculated that more than all the benefits went to investors, and that consumers were worse off. However, this result depends on what would have happened in the counterfactual alternative, and also reflects the early date of the study.

Horton and Littlechild use different counterfactual assumptions and argue, for example, that the nationalised industry would have raised its prices more than assumed. They also have access to more recent data than Newberry and Pollit, which is characterised by lower costs but also by lower prices to customers. On the basis of these assumptions, the research points to customers gaining as well. Studies carried out by Ofgem and the National Audit Office are consistent with these preliminary conclusions.

16. Increase in UK regulation

Active regulation of the electricity supply industry has been costly. Initially OFFER plus OFGAS cost about £16m a year to operate. In 2000/01 Ofgem, the successor to these two bodies, cost £87m, a five fold increase.

OFGEM says that the main reasons for this increase are transitional and can be attributed to several key projects, notably reform of the Pool and the creation

of NETA, the creation of Ofgem from OFFER/OFGAS, and the creation of a new consumer organisation "energywatch".

Removing the costs of these items leaves an underlying cost of running Ofgem of £30m a year during the period from 1998/9 to 2001/2. This is equivalent to 0.25 per cent of an annual residential bill and represents good value for money, especially when the results of the cost benefit analyses are taken into account. Even with this cost, regulation is preferable to either government controlling the industry or no regulation (which can amount to the same thing). Problems have arisen in countries where such methods apply, for example in Germany and New Zealand.

17. Conclusion

EU policy is moving towards UK policy, but some EU countries still have some way to go to catch up with the more advanced Member States. Competition and efficiency incentives brought lower prices, better quality and innovation in the UK. This process required the active regulation of incumbents to ensure access to networks, to stimulate increased efficiency therein, and to promote competition in generation and retail supply. Without this active regulation the full benefits of market competition would not have been achieved.

References

Domah, P. and M. G Pollitt. 2001. "The Restructuring and Privatisation of Electricity Distribution and Supply Businesses in England and Wales: A Social Cost-Benefit Analysis", *Fiscal Studies*, Vol. 22, Nº 1, pp. 107-146.

Littlechild, S. C. 2002. "Competition in Retail Electricity Supply", *Journal des Économistes et des Études Humaines*, Volume 12, nº 2/3, July-September, pp. 353-376.

Littlechild, S. C. 2003. "Electricity: Regulatory Developments Around the World", Beesley Lecture, IEA/LBS, London, 9 October 2001, in C Robinson (ed) *Competition and Regulation in Utility Markets*, London: Institute of Economic Affairs and London Business School, pp 61-87.

Littlechild, S. C. 2003 . "The Birth of RPI-X and Other Observations", in Ian Bartle (ed.), *The UK Model of Utility Regulation*, London: CRI, September, pp. 31-49

Littlechild, S. C. 2003. "Reflections on Incentive Regulation", in *Review of Network Economics (Special Issue on Incentive Regulation)*, Vol. 2, Issue 4, December, pp. 289-315.

Newbery, D. M. and M. G Pollitt. 1997. "The Restructuring and Privatisation of Britain's CEGB - was it Worth it?" *The Journal of Industrial Economics*, Vol. XLV, Nº 3, September, pp. 269-303.

Vass, P., (ed.). 2003. *The Development of Energy Regulation – a Collection of Reviews*, Centre for the Study of Regulated Industries, University of Bath.